

NEW ORIENTAL FLEAS.

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(With 10 text-figures.)

1. *Trichopsylla homoeus carenis* subsp. nov.

DIFFERS from *T. homoeus homoeus* Roths. 1906 in bearing fewer and thinner bristles, especially in the ♂.

♂♀. Metepimerum with 7 bristles in ♂ (4, 3), with 12 to 13 in ♀ (6, 6; 7, 6; 8, 5; 7, 5). Bristles on abdominal tergites below stigmata on each side: in ♂ II 2, 1 or 2, 2, III 2, 1 or 2, 2, IV 1, 1, V 1, VI 1, VII 1, VIII 3, in ♀ II 4, 2 or 3, 2, III 3, 1, IV 1, V 1, VI 0, VII 0, VIII 7 to 10; above stigmata on the two sides together: in ♂ I 11, 9, II 13, 12, III 10, 11, IV 5, 11, V 2, 11, VI 2, 11, VII 9, 2, VIII 7, in ♀ I 12, 9 or 10, II 13 to 15, 12, III 7 to 11, 11 or 12, IV 5, 10 to 12, V 3, 11, VI 2, 10, VII 2 or 3, 10, VIII 7 to 9; on abdominal sternites: in ♂ III 13, VI 5, VII 4, in ♀ VI 12 or 19, VII 12 or 13. On out- and inside of hindfemur in ♂ 8, in ♀ on outside 11 or 12, on inside 10 or 11; on midfemur in ♂ on outside 4 or 6, on inside 4 or 5, in ♀ on outside 4. On outside of hindtibia 10 lateral bristles. Pygidium with 14 or 15 grooves on each side. Tibiae with 6 dorsal notches inclusive of apical one. At posterior side of clasper of ♂, from near manubrium to apical angle 22 to 25 marginal bristles, on outer surface about 5 lateral ones, on inner surface from acetabulum downwards 3 or 4.

Upper Burma: Myitkyna, off *Mustela* sp. (Capt. F. Kingdon Ward), 1 ♂ (type), 2 ♀♀.

2. *Paraceras pendleburyi* sp. nov. (text-figs. 23, 24).

♂♀. Close to *P. javanicus* Ewing 1924, differing in some detail of the tail-ends. In ♂ VIII. t. with more marginal and submarginal long bristles and fewer lateral ones; process P of clasper longer, reaching to anterior apical angle of exopodite F; dorsal margin of F less convex, the posterior apical flap broader and shorter, and the middle one of the three subapical marginal bristles much more spiniform than in *P. javanicus*; apical lobe of IX. st. narrower. The only known ♂ of *P. javanicus*, in U.S. Nat. Mus. (Washington), not being cleared, the details of structure are much obscured.

In ♀ the ventral angle of VII. st. produced and very acute, the projection being much narrower than in *P. javanicus*, recalling *P. sauteri* Roths. 1914, from Formosa. Stylet longer. *P. melinus* Jord. 1925, described from a single ♀ without locality (presumably from India), is another form closely related to *P. pendleburyi*; it agrees with it in the thorax and abdomen bearing fewer small bristles than in *P. javanicus*, but the ventral apical lobe of VII. st. is obtuse, rounded-emarginate. *P. pendleburyi* differs from both *P. javanicus* and *P. melinus* in the midtarsal segment I being much shorter, the proportional lengths of this segment and the midtibia being in *P. javanicus* 1:2.4, in *P. melinus* 1:2.5 and in *P. pendleburyi* 1:2.9. In all three species the proboscis is shorter than in *P. melis* Walk. 1856 and allies, reaching at most to the apex of the trochanter.

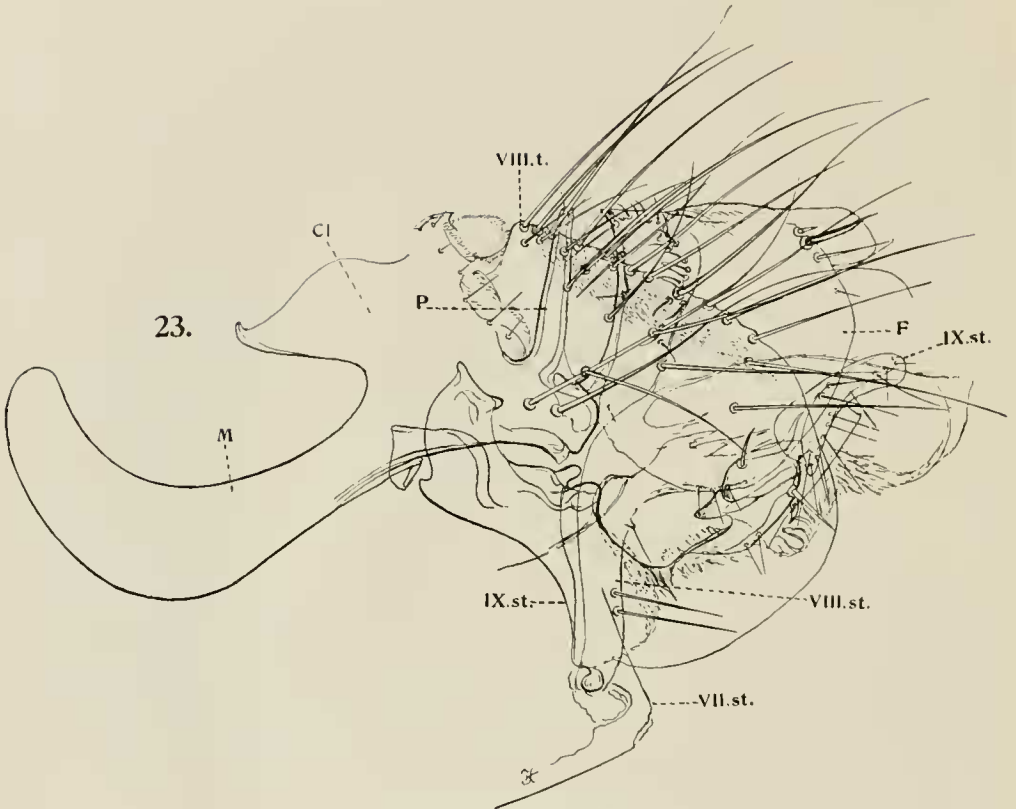


FIG. 23.—*Paraceras pendleburyi* ♂.

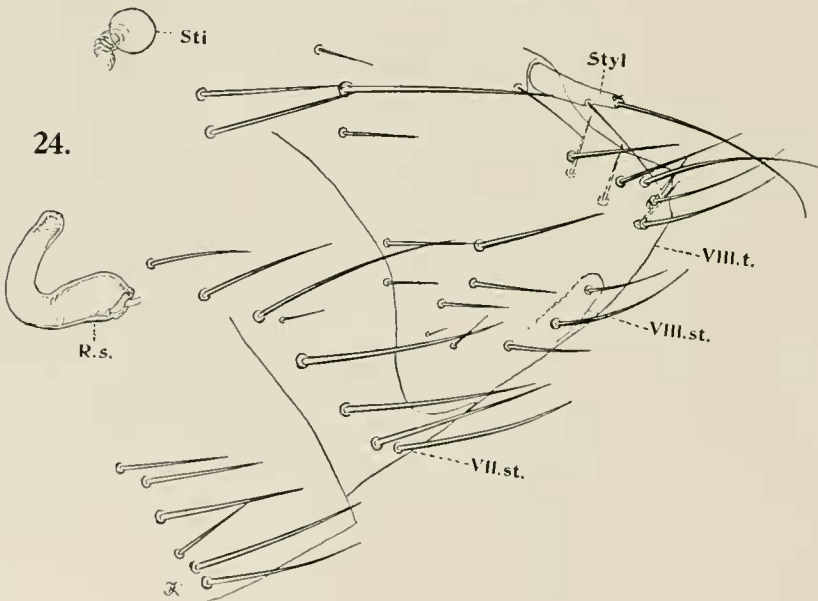


FIG. 24.—*Paraceras pendleburyi* ♀.

Bristles on abdominal tergites of *P. pendleburyi*: in ♂ I 15 to 25, 11 or 12, II 13 to 21, 14 to 16, III 11 to 17, 14 to 16, IV 9 to 15, 14 to 16, V 10 to 14, 14 to 16, VI 9 to 12, 13 or 14, VII 8 to 12, 12 to 15; in ♀ I 15 to 22, 10, 11 14 to 16, 13 or 14, III 12 to 14, 14 or 15, IV 12 to 15, 13 or 14, V 9 to 14, 13 or 14, VI 7 to 10, 12 or 13, VII 3 to 10, 11 or 12. On sternites III to VI in ♂ usually 6, on VII usually 7: ♂ III 4 to 6, IV 4 to 6, VI 6, VII 6 or 7; in ♀ III 6 or 7, IV 7 to 9, V 7 to 10, VI 7 to 12, VII 13 to 16 (on the two sides together).

North Borneo: Kamborangah, Mt. Kinabalu, iv.1929, on *Helictis everetti*, a series (H. M. Pendlebury).

3. *Ctenophthalmus crudelis* sp. nov. (text-fig. 25).

♀. Stigma of VIII. t. large, last ventral bristle of VIII. t. subspiniiform, placed above the last long one, as in *Ct. assimilis* Taschenb. 1880 and a large number of other species; distinguished by the VII. st. and the spermatheca.

Tubercle of frons well below middle. Proboscis slender. Pronotal comb of 15 spines (inclusive of small ventral one each side), the dorsal spines about one-third longer than the pronotum; a row of 10 bristles. On mesonotum a fairly large number dorsally between the anterior rows and base. On metanotum about 6 bristles in front of the 2 rows. Abdominal tergites likewise with 2 rows, containing on III 13, 14, IV 12, 14, VI 11, 12, and on VII 8, 9, there being in addition a few bristles in front of the anterior row; on sternites III 4, 11, IV 3, 10, V 4, 10, VI 6, 9, VII 1, 9.

Hindtibia with 7 dorsal notches, long postmedian bristles on one tibia half the length of the tibia, on the other two-fifths only; longest apical bristle of hindtarsal segment II reaching to subapical notch of III. VII. st. not incrassate at margin, a deep rounded sinus divides the segment into a very prominent, irregularly triangular, upper lobe and a much broader, but very feebly convex lower lobe, the apical margin oblique from this lobe to ventral margin which it reaches a short distance behind the long ventral bristle. VIII. t. ventrally with 8 bristles. Stylet thrice as long as broad. Head of spermatheca broader than in the allied species, widest in middle, rather strongly convex above in middle (malformation?).

Length 2.5 mm., hindfemur 0.34 mm.

Upper Burma: Myitkyna (Capt. F. Kingdon Ward), 1 ♀, host not mentioned.

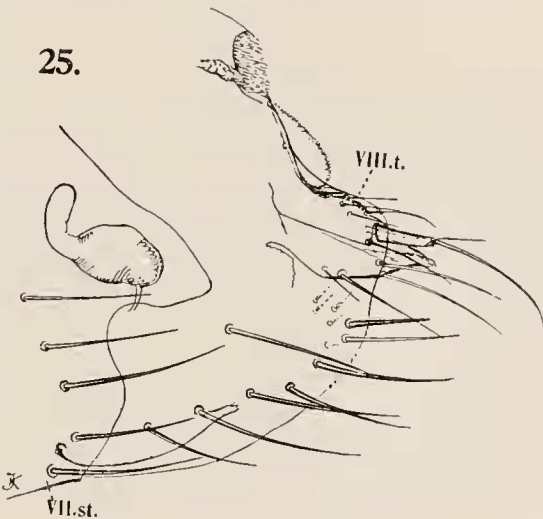


FIG. 25.—*Ctenophthalmus crudelis* ♀.

4. *Palaeopsylla remota* Jord. 1929 (text-fig. 26).

Described from a single West Chinese ♀. The 3 ♀♀ obtained by Harold Stevens in Sikkim agree with the type. In my figure of the type the portion

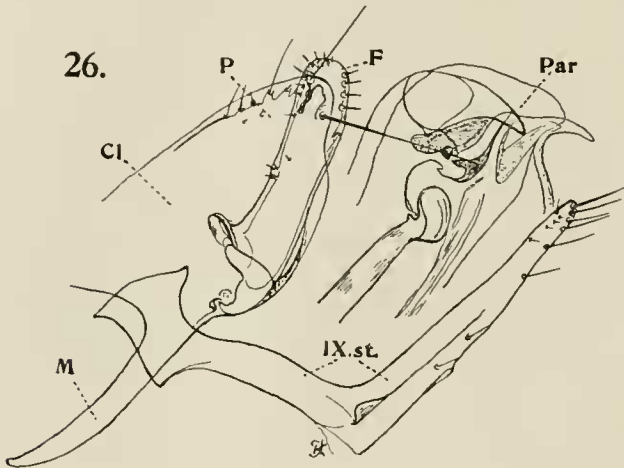


FIG. 26.—*Palaeopsylla remota* ♂.

below the subventral lobe of VII. st. is rather too wide, the lobe being nearer the ventral margin than in the figure. In the ♂ the exopodite extends beyond the apex of the clasper (text-fig. 21), is about five times as long as broad and almost exactly as long as the manubrium measured ventrally from the extreme base of F; the apex is almost evenly

rounded or posteriorly slightly flatter than anteriorly. Anterior and posterior dorsal angles of vertical arm of IX. st. projecting, acute; ventral arm gradually narrowed, with 4 or 5 short bristles at apex, of which the uppermost is the strongest, and a few additional ventral bristles farther frontad. Parameres with 2 sharp hooks on each side.

Sikkim: Lingtam, 1.ii.31, on *Anourosorex assamensis*, 3 pairs (H. Stevens).

5. *Palaeopsylla incurva* sp. nov. (text-figs. 27, 28).

♀. Close to *P. remota* Jord. 1929 from China and Sikkim, differs especially in the spines of the pronotal comb being concave on their dorsal sides, and the proboscis reaching to apical third of coxa.

Head shorter than in the various European species; genal spines nearly as

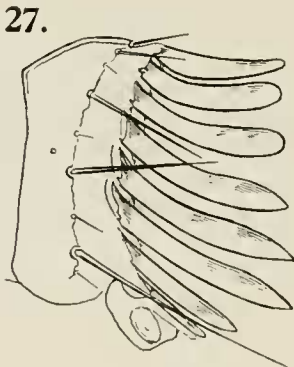


FIG. 27.—*Palaeopsylla incurva* ♀.

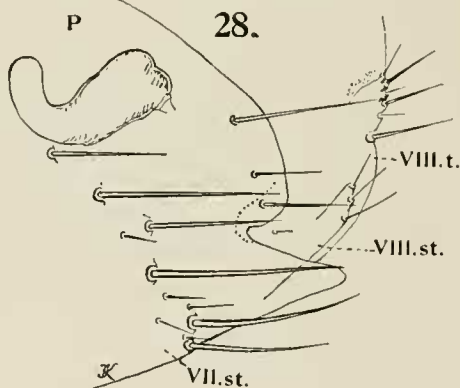


FIG. 28.—*Palaeopsylla incurva* ♀.

in *P. sorecis* Dale 1878, but the second and third spines (from below) broader, second obtuse as in *P. sorecis*, not pointed as in *P. remota*. Pronotum convex dorsally (text-fig. 27), with a comb of 16 spines (inclusive of a small ventral one each side), dorsal spines obtuse, fourth from above acuminate, fifth and sixth more sharply pointed and longer. Lower antepygidial bristle two-thirds the length of the middle one, longer than in other species. VII. st. (text-fig. 28) divided by a triangular sinus into a broad, rounded, upper lobe and a narrow, triangular, longer lower one (the sinus somewhat broader on right side in the unique specimen, as indicated by a dotted line); in *P. remota* the lower lobe is subventral and the sinus above it broadly rounded; 11 large and 11 small bristles on the two sides together. VIII. t. as in *P. remota* with a cluster of 6 apical bristles, of which 3 are quite small, and 3 about the size of the anterior bristles of the abdominal tergites, the lowest of them being the longest. VIII. st. with 3 longish bristles as in *P. remota*. Spermatheca somewhat humped dorsally.

North-east Burma: Adung Valley, off *Sorex* sp., 1 ♀ (Capt. F. Kingdon-Ward and Lord Cranbrook).

6. *Neopsylla dispar* sp. nov. (text-figs. 29, 30).

♂♀. Near *N. stevensi* Roths. 1915 and allies; cf. Nov. Zool. xxxvi. p. 220 (1931). In ♂ the ventral arm of IX. st. rather broad, with long bristles along ventral margin, without spines; in ♀ VII. st. deeply sinuate, head of spermatheca short, tail long.

On pronotum a comb of 20 or 21 spines, which are one-half longer than pronotum in ♂, only a little longer than pronotum in ♀; bristles in ♂ 0, 12, in ♀ 5, 12 (the two sides together). Bristles on mesonotum in ♂ 26 (approximately), 14, in ♀ 30, 12; on metanotum in ♂ 22, 14, in ♀ 31, 12; on metepimerum in ♂ 5, 4, 1, in ♀ 5 or 6, 6, 1.

Spines on abdominal tergites in ♂ I 5, II 4, III 4, IV 2, V 2, in ♀ I to V 2; bristles in ♂ II 16, 18, III 14, 18, IV 8, 17, V 7, 15, VI 5, 16, VII 5, 13, in ♀ II 25, 17, III 26, 17, IV 25, 17, V 19, 17, VI 19, 16, VII 18, 13. On sternites in ♂ III 13, IV 10, V 10, VI 8, VII 12, in ♀ III 23, IV 16, V 18, VI 16, VII 27.

On inner surface of hindcoxa a patch of 9 to 11 short spiniforms in ♂, 6 or 7 in ♀.

Modified Segments.—♂. VIII. st. unfortunately broken (text-fig. 29), its apical margin apparently almost evenly rounded, proximally to it 5 or 6 bristles, four of them evidently very long, on sides and near ventral margin about 9, some of which are short. Manubrium narrow, rather strongly curved upwards, more so than in *N. sondaica* Jord. 1931; process P¹ of clasper (Cl) short, with 3 long marginal bristles on outside and 3 smallish ones, 2 of them lateral, 1 dorsal; process P² much longer than P¹, evenly rounded at apex, groove for reception of subapical angle of F near apex; exopodite F lanceolate, its free anterior margin half the length of F, on posterior margin, which is almost evenly rounded in ventral half, with some small bristles, of which one each near apex, above middle and below middle is longer. Ventral arm of IX. st. very distinctive, its apex obliquely truncate, the ventral angle more or less rounded, at upper angle 2 thin bristles, further down 4 long ones, and at ventral margin beyond middle a row of 4, of which 2 are long (on right side arm of IX. st. the posterior bristle of this

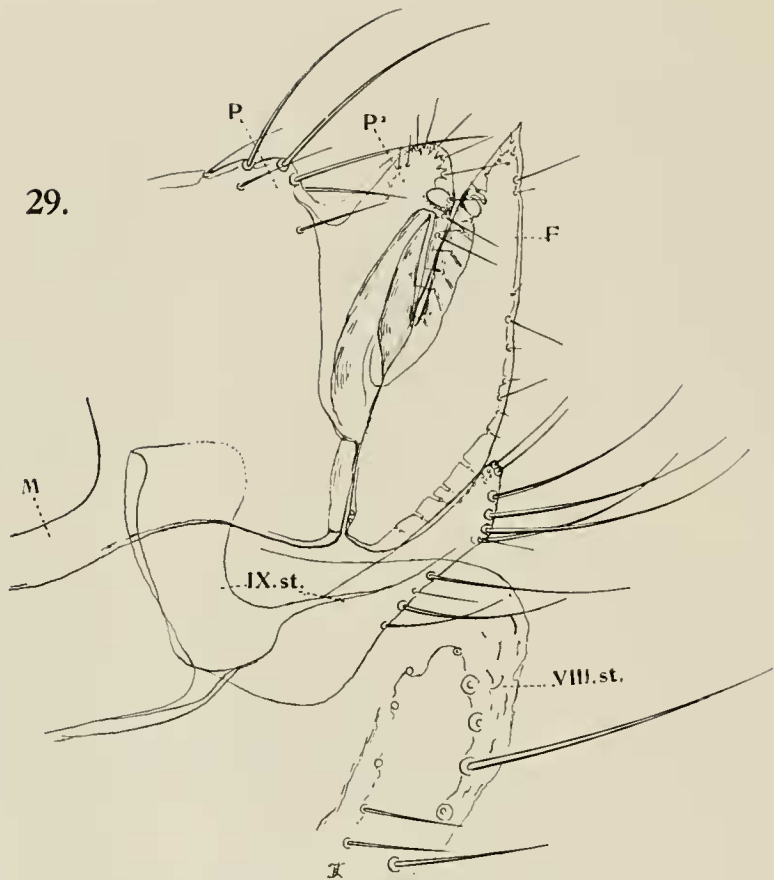


FIG. 29.—*Neopsylla dispar* ♂.

row nearer to apex than on left arm here figured).—♀. VII. st. (text-fig. 30) deeply divided by a triangular sinus, the upper lobe gradually narrowed to a point, the lower one not projecting beyond the apical angle of the ventral margin of the segment, its margin slanting distad from sinus, slightly rounded. On each side of VIII. t. about 10 small dorsal bristles, on ventro-apical area 10 or 11 on outside and 9 or 10 on inside. Head of spermatheca less than twice as long as broad, somewhat widening towards tail, which, measured along the outside curve, is more than twice the length of the head.

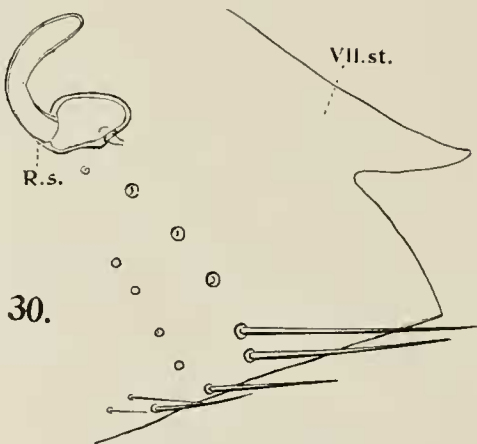


FIG. 30.—*Neopsylla dispar* ♀.

North-east Burma : Adung Valley, on *Epimys* sp., 1931, a pair (Capt. F. Kingdon Ward and Lord Cranbrook).

Xenodaeria gen. nov.

♂. In the shape of the pronotum similar to *Caenopsylla* Roths. 1909, but otherwise very different. Labial palpus with 4 segments ; a vertical genal comb as in *Rhadinopsylla* J. & R. 1912 ; occiput with a median dorsal incrassation (text-fig. 31) ; from below frontal tuberele to vestigial eye an internal incrassation slightly resembling the letter S.

Pronotum dorsally more than twice as long as ventrally, measured from bases of spines, posterior margin incurved, spines strongly incurved, except lower ones, gradually decreasing in length from third from below upwards. Metasternum as in *Rhadinopsylla* with long median projection and short sharp lateral one ; metepimerum without the patch of dense striation present in *Rhadinopsylla*. Three antepygidial bristles. Pygidium with 14 grooves each side. Hindeoxa in apical half with about 10 small lateral hairs on inner surface. Segment V of all tarsi with five pairs of plantar bristles, the first pair placed in between the second. VIII. st. (♂) very large.—Genotype : *X. telios* sp. nov.

7. **Xenodaeria telios** sp. nov. (text-figs. 31, 32).

♂. Frons short (from comb to tuberele), almost evenly rounded from occiput to maxillary palpus, with a small tubercle a little below middle, a frontal row of 6 bristles from near antennal groove to near maxillary palpus, rather stout at base, thin at apex, the third from above almost spiniform ; on sides 2 bristles, and 1 at antennal groove ; a comb of 4 genal spines, the first from above half the length of the second, the other two a little shorter than second, fourth narrower ; genal process narrow, projecting well beyond comb ; first segment of maxillary palpus longer than last ; proboscis reaching to apical fourth of coxa. Occiput a very little longer than the distance from frontal tuberele to tip of longest genal spine, with 3 rows of bristles. Bristles of second segment of antenna short. Antennal groove open.

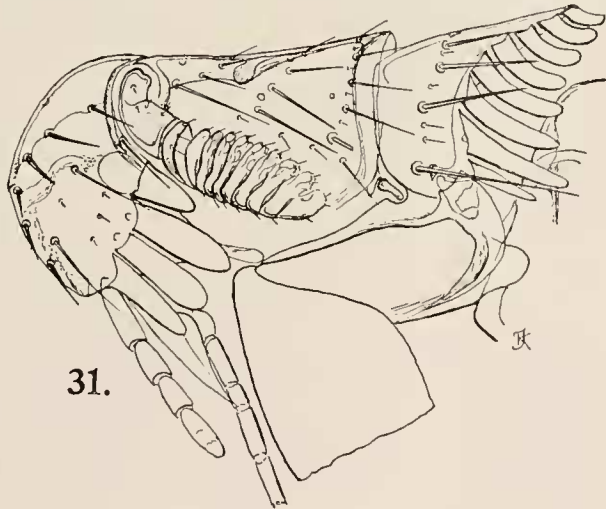


FIG. 31.—*Xenodaeria telios* ♂.

Pronotum with a comb of 16 spines, the dorsal spines rounded at tip, the narrow ventral one straight and pointed ; a row of 9 bristles. Meso- and metanotum with two rows of bristles, the posterior containing 8, mesonotum with a

few additional dorsal bristles in front of the rows and with 6 false subapical spines (on the two sides together). On mesopleura 7 bristles, on metepisternum 1, on metepimerum 4 (2, 2); no apical spine on metanotum, but the margin minutely serrate dorsally.

Abdominal tergites like thoracic tergites somewhat more strongly chitinized dorsally than is usual; number of apical spines on I to V 2; number of bristles on I 8, 8, II 10, 12, III 7, 12, IV 6, 12, V 5, 12, VI 4, 12, VII 3, 11, one bristle below stigma. Median antepygidial bristle long and strong, upper about one-third, lower about two-thirds of median one; the segment very slightly projecting between the two sets. Bristles on sternites III to VIII 4.

Hindcoxa broad, barely one-fourth longer than broad, measured from anterior apical angle to articulation with thorax; one subapical bristle posteriorly. Hindfemur with 3 subapical ventral bristles on outside, 1 on inside, the shorter of the two apical dorsal bristles similar to the lateral bristles of the tibia, but

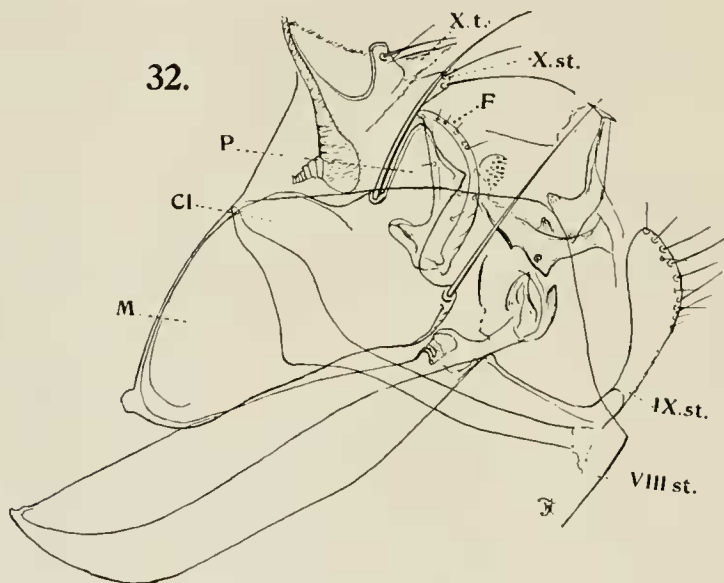


FIG. 32.—*Xenodaeria telios* ♂.

curved (not abbreviated). Hindtibia with 7 dorsal notches inclusive of apical one and a single additional bristle between fifth and sixth, the long bristle of the fifth longer than its distance from apex of tibia, the longest apical one not quite reaching apex of hindtarsal segment I, on outside of tibia 14 or 15 bristles, one of them close to the fifth dorsal pair, on inside no lateral bristles. None of the tarsal bristles reach to the apex of the segment following; lengths of segments: midtarsus 13, 11, 7.5, 5, 12; hindtarsus 30, 19, 12, 8, 13.

Modified Segments.—♂. Stigma of VIII. t. continued to dorsal margin of segment as a narrow stripe bearing scattered hair-like spicules (text-fig. 32). IX. t. raised behind pygidium into a tubercle (lateral aspect) which bears a fairly stout bristle; on anal sternite (X. st.) two apical bristles on each side. Body of clasper (Cl) almost gradually rounded-narrowed frontad, with a very short appendage. A heavy dorsal bristle marks the beginning of process P, which is

about one-fourth longer (on antero-dorsal side) than broad, almost rhombiform, with the anterior upper angle rounded and projecting upwards, the posterior upper angle 90° , the apical margin slightly incurved; one acetabular bristle, long, placed on a projection of the elasper, the margin above the bristle being incurved. Exopodite F claw-like, a little projecting above P, posterior margin evenly curved, with about 6 very thin small bristles, apex pointed. Widened apical portion of vertical arm of IX. st. long, gradually narrowed to a point, anterior side slightly concave, posterior side convex in middle, narrow apex curved upwards; ventral arm gradually widened and at apex narrowed, the apical portion dorsally and ventrally rounded, almost elongate-elliptical, but ventrally convex from apex to below middle, and dorsally convex only towards apex; from apex to middle about a dozen small bristles at ventral margin. Neither IX. st. nor lamina of penis with wire-like levers. Paramere dorsally with a club-like sclerite densely studded with short teeth directed ventrad.

Length 2.2 mm.; hindfemur 0.32 mm.

Sikkim: Lingtam, on *Linsang pardicolor*, 1.ii.31, 1 ♂ (H. Stevens).
